

What is claimed is:

1. A heat-activatable adhesive comprising a semi-crystalline polymer, the semi-crystalline polymer comprising:
 - 5 (a) about 20 to about 70 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least about 20 carbon atoms; and
 - (b) about 80 to about 30 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms, wherein the polymer has an activation temperature of at least about 40 degrees Celsius, and
- 10 wherein the polymer is essentially free of acidic groups.
2. The heat-activatable adhesive of claim 1, wherein the polymer is crosslinked.
3. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 40
- 15 to about 60 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least about 20 carbon atoms.
4. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 45
- 20 to about 55 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least about 20 carbon atoms.
5. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 35
- 25 to about 50 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 22 carbon atoms.
6. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 40
- to about 50 percent by weight of behenyl acrylate.
7. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 70
- 30 to about 50 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.

8. The heat-activatable adhesive of claim 1, wherein the polymer comprises about 65 to about 45 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 5 9. The heat-activatable adhesive of claim 1, wherein the composition has a crystalline content by weight of from about 10 to about 30 percent.
- 10 10. The heat-activatable adhesive of claim 1, wherein the adhesive has a crystalline content by weight of from about 15 to about 25 percent.
- 11 11. The heat-activatable adhesive of claim 1, wherein the adhesive is aggressively tacky at least one temperature above the activation temperature.
- 15 12. The heat-activatable adhesive of claim 1, wherein the polymer comprises less than about one percent by weight of crosslinking monomer units.
- 13 13. The heat-activatable adhesive of claim 1, wherein the activation temperature is at least about 40 degrees Celsius.
- 20 14. The heat-activatable adhesive of claim 1, wherein the activation temperature is less than about 100 degrees Celsius.
- 15 15. A heat-activatable adhesive comprising a semi-crystalline polymer, the semi-crystalline polymer comprising:
- 25 (a) about 20 to about 70 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least about 20 carbon atoms;
- (b) about 80 to about 30 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms; and
- 30 (c) ethylenically-unsaturated non-acidic polar monomer units in an amount of less than about 20 percent by weight, wherein the polymer has an activation

temperature of at least about 40 degrees Celsius, and wherein the polymer is essentially free of acidic groups.

- 5
16. The heat-activatable adhesive of claim 15, wherein the polymer is crosslinked.
17. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 40 to about 60 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 20 carbon atoms.
- 10 18. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 45 to about 55 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 20 carbon atoms.
- 15 19. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 30 to about 70 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 22 carbon atoms.
- 20 20. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 30 to about 70 percent by weight of behenyl acrylate.
21. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 60 to about 40 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 25 22. The heat-activatable adhesive of claim 15, wherein the polymer comprises about 55 to about 45 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 30 23. The heat-activatable adhesive of claim 15, wherein the ethylenically-unsaturated non-acidic polar monomer units are present in an amount of less than about 10 percent by weight.

24. The heat-activatable adhesive of claim 15, wherein the ethylenically-unsaturated non-acidic polar monomer units are present in an amount of less than about 5 percent by weight.
- 5 25. The heat-activatable adhesive of claim 15, wherein the ethylenically-unsaturated non-acidic polar monomer units comprise are selected from the group consisting of N-vinyl lactams, acrylamides, hydroxyalkyl (meth)acrylates, and combinations thereof.
- 10 26. The heat-activatable adhesive of claim 15, wherein the adhesive has a crystalline content by weight of from about 10 to about 30 percent.
27. The heat-activatable adhesive of claim 15, wherein the adhesive has a crystalline content by weight of from about 150 to about 25 percent.
- 15 28. The heat-activatable adhesive of claim 15, wherein the adhesive is a pressure-sensitive adhesive at least one temperature above the activation temperature.
29. The heat-activatable adhesive of claim 15, wherein the activation temperature is at least about 60 degrees Celsius.
- 20 30. The heat-activatable adhesive of claim 15, wherein the activation temperature is less than about 100 degrees Celsius.
31. A method of making a heat-activatable adhesive comprising:
- 25 (a) providing a mixture of polymerizable components comprising about 20 to about 70 percent by weight of alkyl (meth)acrylate monomer having an alkyl group that contains at least about 20 carbon atoms, about 80 to about 30 percent by weight of alkyl (meth)acrylate monomer having an alkyl group that contains from about 4 to about 12 carbon atoms; and
- 30 (b) polymerizing the mixture to provide a semi-crystalline polymer, wherein the semi-crystalline polymer has an activation temperature of at least about 40 degrees Celsius, and wherein the polymer is essentially free of acidic groups.

32. The method of claim 31, wherein the mixture further comprises a crosslinking monomer.
- 5 33. The method of claim 31, wherein the mixture further comprises less than about 20 percent by weight of ethylenically-unsaturated non-acidic polar monomer.
34. The method of claim 31, wherein the mixture further comprises ethylenically-unsaturated non-acidic polar monomer in an amount of less than about 5 percent by weight.
- 10 35. The method of claim 31, further comprising incorporating the semi-crystalline polymer into a heat-activatable adhesive formulation.
- 15 36. A method of making a heat-activatable adhesive comprising:
- (a) providing a mixture comprising about 20 to about 70 percent by weight of alkyl (meth)acrylate monomer having an alkyl group that contains at least about 20 carbon atoms; about 80 to about 30 percent by weight of alkyl (meth)acrylate monomer having an alkyl group that contains from about 4 to about 12 carbon atoms; and
- 20 (b) polymerizing the mixture to provide a semi-crystalline polymer.
37. The method of claim 36, wherein the mixture further comprises a crosslinking monomer.
- 25 38. The method of claim 36, wherein the mixture further comprises less than about 20 percent by weight of ethylenically-unsaturated non-acidic polar monomer.
39. The method of claim 36, wherein the mixture further comprises ethylenically-unsaturated non-acidic polar monomer in an amount of less than about 5 percent by weight.
- 30

40. A heat-activatable adhesive article comprising:
a substrate having a major surface; and
a layer of heat-activatable adhesive comprising a semi-crystalline polymer and
supported on at least a portion of the major surface, wherein the semi-crystalline
polymer comprises:
- (a) about 20 to about 70 percent by weight of alkyl (meth)acrylate
monomer units having an alkyl group that contains at least about 20 carbon
atoms; and
- (b) about 80 to about 30 percent by weight of alkyl (meth)acrylate
monomer units having an alkyl group that contains from about 4 to about
12 carbon atoms, wherein the polymer is crosslinked, wherein the polymer
has an activation temperature of at least about 40 degrees Celsius, and
wherein the semi-crystalline polymer is essentially free of acidic groups.
41. The heat-activatable adhesive article of claim 40, wherein the polymer is
crosslinked.
42. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline
polymer comprises about 40 to about 60 percent by weight of alkyl (meth)acrylate
monomer units having an alkyl group that contains at least 18 carbon atoms.
43. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline
polymer comprises about 45 to about 55 percent by weight of alkyl (meth)acrylate
monomer units having an alkyl group that contains at least 18 carbon atoms.
44. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline
polymer comprises about 40 to about 70 percent by weight of alkyl (meth)acrylate
monomer units having an alkyl group that contains at least 22 carbon atoms.
45. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline
polymer comprises about 40 to about 70 percent by weight of behenyl acrylate.

46. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline polymer comprises about 60 to about 40 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 5 47. The heat-activatable adhesive article of claim 40, wherein the semi-crystalline polymer comprises about 55 to about 45 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 10 48. The heat-activatable adhesive article of claim 40, wherein the adhesive has a crystalline content by weight of from about 10 to about 30 percent.
49. The heat-activatable adhesive article of claim 40, wherein the adhesive has a crystalline content by weight of from about 15 to about 25 percent.
- 15 50. The heat-activatable adhesive article of claim 40, wherein the adhesive is a pressure-sensitive adhesive at at least one temperature above the activation temperature.
51. The heat-activatable adhesive article of claim 50, wherein the semi-crystalline polymer comprises less than about one percent by weight of crosslinking monomer units.
- 20 52. The heat-activatable adhesive of claim 40, wherein the activation temperature is at least about 60 degrees Celsius.
53. The heat-activatable adhesive of claim 40, wherein the activation temperature is less than about 100 degrees Celsius.
- 25 54. A heat-activatable adhesive article comprising:
a substrate having a major surface; and
a layer of heat-activatable adhesive comprising a semi-crystalline polymer and supported on at least a portion of the major surface, wherein the semi-crystalline polymer comprises:
- 30

(a) about 20 to about 70 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least about 20 carbon atoms;

(b) about 80 to about 30 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms; and

(c) ethylenically-unsaturated non-acidic polar monomer units in an amount of less than about 20 percent by weight, wherein the polymer has an activation temperature of at least about 40 degrees Celsius.

55. The heat-activatable adhesive article of claim 54, wherein the polymer is crosslinked.

56. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 40 to about 60 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 18 carbon atoms.

57. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 60 to about 40 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.

58. The heat-activatable adhesive article of claim 54, wherein the ethylenically-unsaturated non-acidic polar monomer units comprise are selected from the group consisting of N-vinyl lactams, acrylamides, and combinations thereof.

59. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 30 to about 70 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains at least 22 carbon atoms.

60. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 30 to about 70 percent by weight of behenyl acrylate.

61. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 60 to about 40 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
- 5 62. The heat-activatable adhesive article of claim 54, wherein the semi-crystalline polymer comprises about 55 to about 45 percent by weight of alkyl (meth)acrylate monomer units having an alkyl group that contains from about 4 to about 12 carbon atoms.
63. The heat-activatable adhesive article of claim 54, wherein the ethylenically-
10 unsaturated non-acidic polar monomer units are present in an amount of less than about 10 percent by weight.
64. The heat-activatable adhesive article of claim 54, wherein the ethylenically-
15 unsaturated non-acidic polar monomer units are present in an amount of less than about 5 percent by weight.
65. The heat-activatable adhesive article of claim 55, wherein the semi-crystalline polymer comprises less than about one percent by weight of crosslinking monomer units.
- 20 66. The heat-activatable adhesive of claim 54, wherein the activation temperature is at least about 60 degrees Celsius.
67. The heat-activatable adhesive of claim 54, wherein the activation temperature is
25 less than about 100 degrees Celsius.
68. The heat-activatable adhesive article of claim 54, wherein the adhesive has a crystalline content by weight of from about 10 to about 30 percent.
69. The heat-activatable adhesive article of claim 54, wherein the adhesive has a
30 crystalline content by weight of from about 15 to about 25 percent.
70. The heat-activatable adhesive article of claim 54, wherein the substrate is a film.

71. The heat-activatable adhesive article of claim 54, wherein the substrate is selected from the group consisting of a sheet and a strip.

5 72. The heat-activatable adhesive article of claim 54, wherein the substrate comprises a thermoplastic polymer.

73. The heat-activatable adhesive article of claim 54, wherein the substrate comprises paper having a release coating thereon.

10